CLAIMS

1. An information recording apparatus for recording record information onto a recording medium having an optically recordable recording surface, comprising:

a laser light source;

a converting optical system for converting a laser beam emitted from said laser light source to a plate-like laser beam whose cross section extends linearly and for emitting the laser beam such that a direction extending linearly is along the recording surface;

a one-dimensional spatial modulating device for performing one-dimensional spatial modulation in the direction extending linearly with respect to the plate-like laser beam, on the basis of the record information;

a recording optical system for recording the record information onto the recording medium, by irradiating the recording surface with reference light based on the laser beam emitted from said laser light source while irradiating the recording surface with the spatial modulated plate-like laser beam as signal light; and

a displacing device for displacing the recoding medium relative to said recording optical system such that irradiation positions of the signal light and the reference light are relatively displaced on the recording surface.

2. The information recording apparatus according to claim 1, wherein said recording optical system includes:

a splitting optical system for splitting the laser beam emitted from said laser light source into the signal light and the reference light in a

previous step of said converting optical system; and

a combining optical system for combining the one-dimensional spatial modulated signal light and the reference light to a same optical path, in a subsequent step of said one-dimensional spatial modulating device.

3. The information recording apparatus according to claim 2, wherein said splitting optical system splits the reference light such that the optical path of the reference light and the plate-like laser beam are located side-by-side as viewed from the recording surface.

4. The information recording apparatus according to claim 1, wherein

said recording optical system further comprises a splitting optical system for splitting the laser beam emitted from said laser light source into the signal light and the reference light in a previous step of said converting optical system, and

the one-dimensional spatial modulated signal light and the reference light are combined to a same optical path and irradiated to the recording surface.

5. The information recording apparatus according to claim 4, wherein said splitting optical system splits the reference light such that the optical path of the reference light and the plate-like laser beam are located side-by-side as viewed from the recording surface.

6. The information recording apparatus according to claim 1, wherein the reference light is emitted from said laser light source, together with the

signal light, and irradiated to the recording surface through said converting optical system, said one-dimensional spatial modulating device, and said recording optical system.

7. The information recording apparatus according to claim 1, further comprising an irradiation angle changing device capable of relatively changing irradiation angles of the signal light and the reference light with respect to the recording surface.

8. The information recording apparatus according to claim 1, wherein at least one portion of said laser light source, said converting optical system, said one-dimensional spatial modulating device, and said recording optical system disposed in a same plane located along the recording surface.

9. The information recording apparatus according to claim 1, wherein said recording optical system includes a mirror device for changing the one-dimensional spatial modulated plate-like laser beam which travels along the recording surface, to travel in a direction crossing the recording surface.

10. The information recording apparatus according to claim 1, wherein at least one of said converting optical system, said one-dimensional spatial modulating device, and said recording optical system includes an optical element in which a cross section crossing a traveling direction of the plate-like laser beam is in a longitudinal shape, extending along the recording surface in accordance with a cross section of light flux, which extends linearly, of the plate-like laser beam.

11. An information recording / reproducing apparatus comprising:

the information recording apparatus according to claim 1;

a controlling device for making said one-dimensional spatial modulating device function as a shielding device for shielding the laser beam emitted from said laser light source; and

a reproducing device for detecting interference light produced by transmission, diffraction, or reflection on the recording medium, caused by the reference light irradiated to the recording surface through said recording optical system, and reproducing the record information on the basis of the detected interference light.